species in *Chamaesyce*. Several new combinations are made.—A. H. MOORE and S. MOORE (Jour. Bot. **52**:263–265. 1914) have published three new species of Compositae from Peru.—S. MOORE (*ibid.* 89–98. *pl. 530*) has published several new species of the Vernoniae from Africa and includes a new genus (*Muschleria*). The same author (*ibid.* 146–151. *pl. 530B*) has described a number of new flowering plants from South Africa and includes a new genus (*Rhamphogyne*) of the Compositae from Rodriguez Island; and (*ibid.* 333–337) under the title "Alabastra diversa" has published several new species of flowering plants including a new *Acalypha* (*A. Forbesii*) from Peru.—J. M. GREENMAN.

Chemistry of diseased beets.—The composition of sound and of diseased sugar beets has been investigated by BODNÁR[5] for the purpose of determining if any differences were discoverable which might account for a predisposition to bacterial root-rot on the part of the diseased plants, and thus throw some light on SORAUER's view that this disease is induced by abnormal metabolism by which the way is paved for inroads by bacteria. In the preparation of a mash from the diseased beets BODNÁR apparently used the whole of each beet without a separation of the sound and the diseased portions, except in a few instances when sound and diseased tissues of the same beet were compared. He found that the diseased beets contained less water and less cane sugar, but more acid and more invert sugar than the sound beets. The invert sugar content of the sound portion of diseased beets was higher than that of normal beets, but not as high as that of the diseased portion of the same beet. Invertase was shown to be present in both the sound and the diseased portions of diseased beets, but absent in sound beets. The ash content of both the sound and the diseased tissue of diseased beets was higher than that of sound beets, and the ash was unusually rich in aluminium. That the conditions found in the diseased beets can be regarded as determining factors predisposing the plants to disease is unlikely, since the conditions were found after the plants had been invaded. The high acidity of the diseased beets, as well as the loss in cane sugar and increase in invert sugar, can be attributed directly to the metabolic activity of the bacteria. Even the increased ash content may indicate merely a proportionate loss of organic matter. It is interesting, however, and worthy of further investigation that in partly diseased beets invertase is present in both the sound and the diseased tissues, and that both are characterized by a higher ash content than normal beets. These conditions seem to indicate an effect of the disease beyond the tissues actually invaded.—H. HASSELBRING.

Alcohol oxidation in seed plants.—Two views have been proposed to explain why alcohol which is produced in plant tissues under conditions of

[5] BODNÁR, J., Biochemische Untersuchungen der Rubenschwanzfäule der Zuckerrübe. Biochem. Zeitschr. **69**:245–256. 1915.

imperfect aeration does not occur under conditions of normal respiration. It was at first assumed that alcohol was an intermediate product in normal respiration, but did not accumulate because it was utilized as soon as formed. Later, GODLEWSKI suggested that the alcohol produced under anaerobic conditions is a secondary product which does not occur among the intermediate products of respiration under normal conditions. With a view of throwing some light on this problem, ZALESKI[6] investigated the utilization of alcohol by higher plants. Etiolated seedlings of *Vicia Faba* and *Lupinus albus* and seeds of *Medicago* and wheat were floated for 24–48 hours in solutions containing 1 per cent of alcohol, or were kept for a time under anaerobic conditions. Thereupon, the alcohol was determined in one portion of the plants immediately and in the other after 24 hours, during which loss of alcohol by evaporation was prevented. The experiments showed that 27–72 per cent of the absorbed alcohol disappeared from the plants in the course of 24 hours. These experiments show that higher plants are capable of oxidizing alcohol when it is present in their tissues, but, as the author points out, it does not necessarily follow that alcohol is actually an intermediate product in normal respiration.—H. HASSELBRING.

Multinucleate cells.—The occasional occurrence of multinucleate cells in the higher plants is well known, but recent investigations indicate that it may be a very common phenomenon. BEER and Mrs. ARBER[7] have been making an extensive study of the subject, and have concluded that in the cortical and medullary parenchyma of stems there is a stage between the meristematic and mature conditions in which each cell characteristically contains more than one nucleus. This stage may be prolonged, or it may be so brief as to be easily overlooked. They are inclined to believe that this binucleate or multinucleate phase may be a universal phenomenon.

Miss PRANKERD[8] has investigated a wide range of forms, and finds that such cells (usually binucleate) occur in different tissues of various young organs, and suggests that their occurrence is characteristic of regions of active growth. In some cases these nuclei are probably produced by amitosis, followed by wall formation, and it is maintained that these processes are a means of tissue formation in rapidly growing organs.—J. M. C.

Phylogeny of Filicales.—In continuing his studies of the phylogeny of Filicales, BOWER[9] has investigated *Cheiropleuria biscupis*, a monotypic fern

[6] ZALESKI, W., Über die Alkoholoxydation durch die Samenpflanzen. Biochem. Zeitschr. **69**:289–293. 1915.

[7] BEER, RUDOLF, and ARBER, AGNES, On the occurrence of binucleate and multinucleate cells in growing tissues. Ann. Botany **29**:597, 598. 1915.

[8] PRANKERD, T. L., Notes on the occurrence of multinucleate cells. Ann. Botany **29**:599–604. *figs. 8.* 1915.

[9] BOWER, F. O., Studies in the phylogeny of the Filicales. V. *Cheiropleuria bicuspis* (Bl.) Presl, and certain other related ferns. Ann. Botany **29**:495–529. *pls. 24, 25.* 1915.